CLAIMS

1. A method of making high-density (>7.0g/ml) sintered, iron-based alloy parts characterised by the steps of:

   (i) mixing an atomised boron-containing master alloy powder, or a plurality of master alloy powders at least one of which is boron-containing, with a conventional iron or iron alloy powder; and

   (ii) pressing and sintering the mix to an increased density to produce the part required.

2. A method as claimed in Claim 1, wherein before pressing and sintering, graphite is added to the mix in conventional amounts as used in powder metallurgy technology.

3. A method as claimed in Claim 1 or Claim 2, wherein before pressing and sintering, a lubricant is added to the mix in conventional amounts as used in powder metallurgy technology.

4. A method as claimed in Claim 3, wherein the lubricant is a solid.

5. A method as claimed in Claim 3, wherein the lubricant is a liquid.

6. A method as claimed in Claim 3, wherein the lubricant is a solid dissolved in a liquid.

7. A method as claimed in any preceding claim, wherein the master alloy powder(s) contains from 1-20% by wt boron.

8. A method as claimed in any preceding claim, wherein the master alloy powder(s) has a mean particle size from 1-30 microns, preferably under 20 microns.

9. A method in accordance with any preceding claim, wherein the sintering is effected at temperatures in the range 1050°C to 1300°C, and preferably below

effected at temperatures in the range 1050°C to 1300°C, and preferably below 1200°C.

10. A method as claimed in any preceding claim, wherein sintering is effected in a reducing, inert or vacuum atmosphere.

11. A method in accordance with any preceding claim, wherein from <6% by weight of atomised master alloy powder(s) is mixed with the conventional iron or low alloy powder.

12. A method in accordance with any preceding claim, wherein the pressing is cold pressing.

13. A method in accordance with any preceding claim, wherein the pressing is warm pressing <300°C.

14. A method in accordance with any preceding claim, wherein the pressed density of the part is 6.6-7.4g/ml.

15. A high-density sintered iron based part made in accordance with the method of any preceding claim.

16. A part as claimed in Claim 15, having a boron content above 0.05% by wt.

17. A part as claimed in Claim 15 or Claim 16, having a density from 7.2-7.8, preferably 7.4-7.6g/ml.